

What is claimed is:

Sub  
a1

1. An ingress noise control system for use in a cable system providing two-way communication using different frequency bands for transmission of upstream and downstream signals, wherein

an ingress noise blocking device, which includes a synchronous detection controller and a gate switch circuit, and which turns on the gate switch circuit only when an upstream signal is synchronously detected, to pass the upstream signal therethrough, is provided in a transmission path of the upstream signal.

2. An ingress noise control system according to claim 1, including a configuration for judging whether or not the upstream signal is a valid upstream signal, based on a spectrum of the upstream signal when the upstream signal is synchronously detected by the synchronous detection controller, and for turning on the gate switch circuit to pass the valid upstream signal therethrough only when the upstream signal is judged to be a valid upstream signal.

3. An ingress noise blocking device comprising: first and second separation filters for separating upstream and downstream signals using different frequency bands in a cable system;

a gate switch circuit for passing or not passing the upstream signal between the first and second separation filters; and

a synchronous detection controller for turning on the gate switch circuit only when the upstream signal is synchronously detected.

4. An ingress noise blocking device according to claim 3, including a synchronous detection judging unit which obtains a spectrum of the upstream signal synchronously detected by the synchronous detection controller, and which, based on the ratio of signal levels at predetermined frequencies, judges whether or not the upstream signal is a valid upstream signal, and

turns on the gate switch circuit only when the upstream signal is judged to be a valid upstream signal.

5        5.    An ingress noise blocking device according to claim 3, wherein the synchronous detection controller has a differential detection circuit configuration which includes a delay circuit for delaying the upstream signal and a synchronous detector for multiplying the upstream signal by the signal delayed by the delay circuit.

10       6.    An ingress noise blocking device according to claim 4, wherein the synchronous detection controller has a differential detection circuit configuration which includes a delay circuit for delaying the upstream signal and a synchronous detector for multiplying the upstream signal by the signal delayed by the delay circuit.

15       7.    An ingress noise blocking device according to claim 3, wherein the synchronous detection controller comprises:

20                a band-pass filter for passing only the upstream signal falling within a prescribed frequency band;

                 a delay circuit for delaying the signal passed through the band-pass filter;

25                a synchronous detection circuit for performing synchronous detection using the signal passed through the band-pass filter and the signal delayed through the delay circuit;

                 a low-pass filter for generating a baseband signal from a detected signal supplied from the synchronous detection circuit; and

30                a synchronous detection judging unit for judging the presence or absence of the upstream signal based on the presence or absence of the baseband signal from the low-pass filter.

35       8.    An ingress noise blocking device according to claim 7, wherein the synchronous detection controller further includes a spectrum detector for detecting a spectrum of the upstream signal, and wherein the

5

1) $10^{23}$	2) $10^{22}$	3) $10^{21}$	4) $10^{20}$	5) $10^{19}$	6) $10^{18}$	7) $10^{17}$	8) $10^{16}$	9) $10^{15}$	10) $10^{14}$	11) $10^{13}$	12) $10^{12}$	13) $10^{11}$	14) $10^{10}$	15) $10^9$	16) $10^8$	17) $10^7$	18) $10^6$	19) $10^5$	20) $10^4$	21) $10^3$	22) $10^2$	23) $10^1$	24) $10^0$	25) $10^{-1}$	26) $10^{-2}$	27) $10^{-3}$	28) $10^{-4}$	29) $10^{-5}$	30) $10^{-6}$	31) $10^{-7}$	32) $10^{-8}$	33) $10^{-9}$	34) $10^{-10}$	35) $10^{-11}$	36) $10^{-12}$	37) $10^{-13}$	38) $10^{-14}$	39) $10^{-15}$	40) $10^{-16}$	41) $10^{-17}$	42) $10^{-18}$	43) $10^{-19}$	44) $10^{-20}$	45) $10^{-21}$	46) $10^{-22}$	47) $10^{-23}$	48) $10^{-24}$	49) $10^{-25}$	50) $10^{-26}$	51) $10^{-27}$	52) $10^{-28}$	53) $10^{-29}$	54) $10^{-30}$	55) $10^{-31}$	56) $10^{-32}$	57) $10^{-33}$	58) $10^{-34}$	59) $10^{-35}$	60) $10^{-36}$	61) $10^{-37}$	62) $10^{-38}$	63) $10^{-39}$	64) $10^{-40}$	65) $10^{-41}$	66) $10^{-42}$	67) $10^{-43}$	68) $10^{-44}$	69) $10^{-45}$	70) $10^{-46}$	71) $10^{-47}$	72) $10^{-48}$	73) $10^{-49}$	74) $10^{-50}$	75) $10^{-51}$	76) $10^{-52}$	77) $10^{-53}$	78) $10^{-54}$	79) $10^{-55}$	80) $10^{-56}$	81) $10^{-57}$	82) $10^{-58}$	83) $10^{-59}$	84) $10^{-60}$	85) $10^{-61}$	86) $10^{-62}$	87) $10^{-63}$	88) $10^{-64}$	89) $10^{-65}$	90) $10^{-66}$	91) $10^{-67}$	92) $10^{-68}$	93) $10^{-69}$	94) $10^{-70}$	95) $10^{-71}$	96) $10^{-72}$	97) $10^{-73}$	98) $10^{-74}$	99) $10^{-75}$	100) $10^{-76}$	101) $10^{-77}$	102) $10^{-78}$	103) $10^{-79}$	104) $10^{-80}$	105) $10^{-81}$	106) $10^{-82}$	107) $10^{-83}$	108) $10^{-84}$	109) $10^{-85}$	110) $10^{-86}$	111) $10^{-87}$	112) $10^{-88}$	113) $10^{-89}$	114) $10^{-90}$	115) $10^{-91}$	116) $10^{-92}$	117) $10^{-93}$	118) $10^{-94}$	119) $10^{-95}$	120) $10^{-96}$	121) $10^{-97}$	122) $10^{-98}$	123) $10^{-99}$	124) $10^{-100}$	125) $10^{-101}$	126) $10^{-102}$	127) $10^{-103}$	128) $10^{-104}$	129) $10^{-105}$	130) $10^{-106}$	131) $10^{-107}$	132) $10^{-108}$	133) $10^{-109}$	134) $10^{-110}$	135) $10^{-111}$	136) $10^{-112}$	137) $10^{-113}$	138) $10^{-114}$	139) $10^{-115}$	140) $10^{-116}$	141) $10^{-117}$	142) $10^{-118}$	143) $10^{-119}$	144) $10^{-120}$	145) $10^{-121}$	146) $10^{-122}$	147) $10^{-123}$	148) $10^{-124}$	149) $10^{-125}$	150) $10^{-126}$	151) $10^{-127}$	152) $10^{-128}$	153) $10^{-129}$	154) $10^{-130}$	155) $10^{-131}$	156) $10^{-132}$	157) $10^{-133}$	158) $10^{-134}$	159) $10^{-135}$	160) $10^{-136}$	161) $10^{-137}$	162) $10^{-138}$	163) $10^{-139}$	164) $10^{-140}$	165) $10^{-141}$	166) $10^{-142}$	167) $10^{-143}$	168) $10^{-144}$	169) $10^{-145}$	170) $10^{-146}$	171) $10^{-147}$	172) $10^{-148}$	173) $10^{-149}$	174) $10^{-150}$	175) $10^{-151}$	176) $10^{-152}$	177) $10^{-153}$	178) $10^{-154}$	179) $10^{-155}$	180) $10^{-156}$	181) $10^{-157}$	182) $10^{-158}$	183) $10^{-159}$	184) $10^{-160}$	185) $10^{-161}$	186) $10^{-162}$	187) $10^{-163}$	188) $10^{-164}$	189) $10^{-165}$	190) $10^{-166}$	191) $10^{-167}$	192) $10^{-168}$	193) $10^{-169}$	194) $10^{-170}$	195) $10^{-171}$	196) $10^{-172}$	197) $10^{-173}$	198) $10^{-174}$	199) $10^{-175}$	200) $10^{-176}$	201) $10^{-177}$	202) $10^{-178}$	203) $10^{-179}$	204) $10^{-180}$	205) $10^{-181}$	206) $10^{-182}$	207) $10^{-183}$	208) $10^{-184}$	209) $10^{-185}$	210) $10^{-186}$	211) $10^{-187}$	212) $10^{-188}$	213) $10^{-189}$	214) $10^{-190}$	215) $10^{-191}$	216) $10^{-192}$	217) $10^{-193}$
--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	---------------	---------------	---------------	---------------	---------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------